What is claimed is:

1. A method of reconstructing a three-dimensional information about the structure of an object within a volume of interest from projection images acquired by a digital tomosynthesis system having an x-ray source configured to emit x-rays from different positions relative to a detector and said volume of interest, said method comprising:

acquiring projection images of said volume of interest;

preparing new images by processing said projection images, wherein said processing comprises preparing a filtered version of at least one of said projection images; and

backprojecting said new images.

2. The method as described in claim 1 wherein said filtered versions are prepared with at least one filter which depends on the height of the imaged volume of interest above the detector plane.

3. The method as described in claim 2 wherein said height comprises the minimum and the maximum height of the volume of interest.

4. The method as described in claim 1 wherein said filtered versions are prepared with at least one filter which depends on the focal spot position corresponding to the image to be filtered.

5. The method as described in claim 1 wherein said filtered versions are prepared with at least one filter which depends on a focal spot position.

6. The method as described in claim 1 wherein said filtered versions are prepared with at least one filter derived using exact elementary filters.

7. The method as described in claim 1 wherein said filtered versions are prepared using an approximation of the exact elementary filter.

8. The method as described in claim 1 wherein said filter versions are prepared with a filter derived using a boxcar filter.

9. The method as described in claim 1 wherein said filtered versions are prepared with at least one filter corresponding to ART after a prespecified number of iterations.

10. The method as described in claim 1 wherein said filtered versions are prepared with at least one filter corresponding to ART after convergence.

11. The method as described in claim 1 wherein said filtered versions are prepared with at least one filter which comprises a combination of several filters, wherein the computational effort is reduced.

12. The method as described in claim 1 further comprising the step of selecting at least one filter to use for the filtered versions.

13. The method as described in claim 12 wherein said filter is selected corresponding to a prespecified number of iterations in an ART reconstruction.

14. The method as described in claim 12 wherein said filter is selected corresponding to a prespecified number of iterations in an ART reconstruction after convergence.

15. The method as described in claim 1 further comprising the step of reconstructing the imaged volume of interest from said filtered versions.

16. The method as described in claim 1 wherein each of said new images is a filtered version of the corresponding projection image.

17. The method as described in claim 1 wherein at least one of said new images is a linear combination of filtered versions of at least two projection images.

18. The method as described in claim 1 wherein each of said new images is the sum of filtered versions of all of said projection images.

19. The method as described in claim 1 wherein for each new image, and for each projection image that contributes to that new image, there is a specifically derived filter.

20. The method as described in claim 1 wherein said backprojecting comprises OSBP backprojection.

21. The method as described in claim 1 further comprising the step of applying at least one of minimum and maximum constraint values to the reconstructed three-dimensional information.

22 The method as described in claim 1 further comprising the step of applying geometric constraints to the reconstructed three-dimensional information.

23. The method as described in claim 1 further comprising the step of iteration of the reconstruction of the three-dimensional information.

24. The method as described in claim 1 further comprising iterating the reconstruction of the three-dimensional information with at least one iterative update.

25. The method as described in claim 24 wherein each iterative update comprises:

re-projecting, for one or more projection images, the three-dimensional information of a volume of interest according to the associated projection geometry;

computing the difference image of the re-projected image to the corresponding acquired projection image;

reconstructing a three-dimensional information of the volume of interest based on the difference images; and

updating the previously reconstructed three-dimensional information of the volume of interest with the three-dimensional information based on the difference images.

26. The method as described in claim 24 further comprising a partition of the projection images into sets of projection images, each of said iterative updates being based on the projection images or difference images corresponding to one or more sets of projection images.

27. The method as described in claim 26 where each projection image is contained in at least one set of projection images.

28. The method of claim 26 where each projection image is contained in exactly one set of projection images.

29. The method of claim 26, where at least one iterative update is performed for each of the sets of projection images.

30. A method of reconstructing a three-dimensional information of a volume of interest from projection images acquired by a digital tomosynthesis system having an x-ray source configured to emit x-rays from different positions relative to a detector and said volume of interest, said method comprising:

acquiring projection images of said volume of interest;

selecting at least one filter to prepare filtered versions;

preparing new images, wherein said preparing comprises preparing filtered versions of each of said projection images; and

backprojecting said new images.

31. The method as described in claim 30 wherein the step of selecting a filter comprising the step of using at least one specifically derived filter for each of said projection images.

32. The method as described in claim 30 wherein said filter is selected corresponding to a given number of iterations in an equivalent standard ART reconstruction.

33. The method as described in claim 30 wherein said filter is selected corresponding to a standard ART reconstruction after convergence.

34. The method as described in claim 30 wherein N filtering steps are utilized for each of the N projection images, wherein N is the number of acquired projection images.

35. The method as described in claim 34 wherein each of said new images is a linear combination of filtered versions of all projection images.

36. The method as described in claim 35 wherein at least one filtered version of a projection image is replaced by a filtered version of a different projection image.

37. The method as described in claim 36 wherein said replacement filtered versions comprise shift-translation of said original filtered versions with the position of the filter with respect to a central slice of the volume of interest remaining constant.

38. The method as described in claim 30 further comprising the step of combining said backprojecting step with OSBP techniques, whereby artifacts are minimized.

39. The method as described in claim 30 further comprising the step of setting minimum and maximum constraint values in said reconstruction.

40. The method as described in claim 30 wherein the filtered versions are prepared with filters that suppress noise in the images.

41. The method as described in claim 30 wherein the filtered versions retain only the high frequency content of said projection images.

42. The method as described in claim 30 wherein the x-ray trajectory is substantially linear and said filtered versions are prepared using said filters combined with transversal filtering components.

43. The method as described in claim 30 wherein the x-ray trajectory is substantially linear and said filtered versions are prepared using substantially one-dimensional filtering components.

44. The method as described in claim 30 wherein said filtered versions are prepared using a boxcar filter.